Executive Summary
Backgrounder
Published by The Heritage Foundation
No. 2216
December 18, 2008

The Oil-Price Roller Coaster: Global Challenges for the Obama Administration

Ariel Cohen, Ph.D., and Owen Graham

The global financial and economic crisis has caused an abrupt slide in energy prices, down to $40–$50 a barrel of NYMEX light sweet crude from the July 2008 highs of $147. While oil prices, along with other commodities, are expected to continue to fall in the short term, over the medium to long term, economic recovery is likely to generate growth in demand, and oil prices are expected to recover as energy markets tighten. Moreover, lower oil prices may also impede the massive investment needed to meet rising demand by 2030, delay introduction of energy-saving technologies, and make alternative fuels less competitive. The tight credit environment will also make it more difficult for energy firms to obtain the necessary funding for financing the capital-intensive capacity growth, especially for expensive and difficult offshore exploration and development, and heavy oil, oil sands or oil shale production.

As the recent steep fall in oil prices has illustrated, predicting the price of oil is a risky business. Goldman Sachs and Russia's Gazprom, which predicted oil at $200 to $250 a barrel, respectively, in 2008, were proven wrong. Yet, a number of trends are firmly in place that point to higher oil prices beyond the current recession, and are, indeed, transforming the global energy market: a massive rise in oil demand from emerging markets; a lack of OPEC and non-OPEC spare capacity to meet peak demand; a shift of influence over oil reserves and production from international oil companies (IOCs) to national oil companies (NOCs); an insufficient level of investment in production capacity; a decrease in discovery of oil fields; and a rising rate of oil field depletion. Making matters worse, there continues to be an increase in energy nationalism and the proclivity to use energy as a geopolitical tool.

The increase in demand for oil in China, India, the Persian Gulf states, and other developing nations remains the most significant phenomenon transforming global oil markets today. Rising internal consumption in key oil-producing states is also leaving less oil for export and is a significant constraint on future supply.

Overall, the projected rise in global demand between now and 2030 is staggering. Even correcting for the financial crisis, the likelihood that plans to increase crude oil production by 25 to 30 million barrels per day (mbd) by 2030, as the International Energy Agency forecasts, will be successful is not encouraging. With non-OPEC supply growth expected to increase slowly and contribute little in meeting demand by 2030, the burden will increas-

This paper, in its entirety, can be found at:
www.heritage.org/Research/EnergyandEnvironment/bg2216.cfm

Produced by the Douglas and Sarah Allison
Center for Foreign Policy Studies
of the
Kathryn and Shelby Cullom Davis
Institute for International Studies

Published by The Heritage Foundation
214 Massachusetts Avenue, NE
Washington, DC 20002–4999
(202) 546-4400 • heritage.org

ingly fall on OPEC. OPEC claims that its member countries already have the plans and investments to expand production capacity to meet demand in place. However, it has already failed to meet its 2006 capacity expansion targets and its members are suffering from project completion delays.

In order to meet growing oil demand beyond the current crisis, the world will need much greater investment in the oil and gas sector. Non-OPEC and OPEC suppliers are not taking the necessary steps to facilitate this investment and are failing to meet production forecasts.

Moreover, the depletion rates of oil fields worldwide are rising, and new oil fields are not being discovered or coming online quickly enough to replace the existing production capacity. Depletion rates of the world's top oil fields range from 4.5 percent to 9 percent, roughly the equivalent of Iranian and Saudi annual production, respectively. (Even 4.5 percent is an enormous percentage and has major implications to future supply.)

With diminishing global spare capacity and the growing geopolitical potential for supply disruptions, it is time to confront anti-competitive policies by the OPEC and non-OPEC oil producers which block investment and foreign ownership of reserves. To increase and diversify automotive fuel supply, boost investment, open access to the remaining oil and gas reserves, and diversify the basket of transportation fuels, the Obama Administration and Congress, in coordination with international oil companies and other consumer countries should:

- **Increase pressure on OPEC and non-OPEC countries** to increase exploration and development of petroleum reserves, expanding access for the more efficient international oil companies. The next Administration should work with other energy-consuming governments and international organizations to enhance the rule of law and promote property rights among oil-exporting countries. Consumer nations should make opening energy-producing economies to energy investment a part of their bilateral agendas with producers.
- **Authorize oil exploration and production in the Arctic National Wildlife Refuge (ANWR), other promising Arctic areas, and the lower 48 states** in order to expand domestic energy supply. Congress should also streamline regulations for areas in the Arctic that it has already opened but heavily regulated.
- **Encourage market-based energy-saving technologies and competitive unconventional sources of transportation fuels worldwide** to expand global supply of transportation fuels and facilitate transition to electricity-based urban automotive transportation.
- **Facilitate transformation of the automotive fuels and propulsion** without distorting the market or subsidizing automakers.

Conclusion

A tight transportation-fuel (petroleum) market is likely to return in the years ahead due to global demand, heightened political risks, and increasing resource nationalism by oil-producing governments. This perfect storm of supply and demand turbulence may have temporarily subsided, but two significant implications remain. First, oil-producing states will return to accruing more influence in the years to come, wielding the energy weapon, pressuring consumer nations, and placing constraints on the foreign policy options for the U.S. and its allies. Second, the world could face a major supply crunch by 2015. These trends are far-reaching and have major implications for national security and energy policies, and must be anticipated by the incoming Obama Administration.

—Ariel Cohen, Ph.D., is Senior Research Fellow in Russian and Eurasian Studies and International Energy Security in the Douglas and Sarah Allison Center for Foreign Policy Studies, a division of the Kathryn and Shelby Cullom Davis Institute for International Studies, at The Heritage Foundation. Owen Graham is a Research Assistant in the Allison Center.

Backgrounder

Published by The Heritage Foundation

No. 2216
December 18, 2008

The Oil-Price Roller Coaster: Global Challenges for the Obama Administration

Ariel Cohen, Ph.D., and Owen Graham

The global financial crisis has caused a massive slide in energy prices, down to $40–$50 a barrel of NYMEX light sweet crude from the July 2008 highs of $147. While oil prices, along with other commodities, are expected to continue their fall in the short term, over the medium to long term, economic recovery is likely to generate growth in demand, and oil prices are expected to recover as energy markets tighten.

Moreover, lower oil prices are likely to impede the massive investment needed to meet rising demand by 2030, delay introduction of energy-saving technologies, and make alternative fuels less competitive. The tight credit environment will also make it more difficult for energy firms to obtain the necessary funding for financing the capital-intensive growth in production capacity, especially necessary for expensive and difficult offshore production, exploration and development, and heavy oil, oil sands, or oil shale production.

As the recent steep fall in oil prices has illustrated, predicting the price of oil is a risky business. Goldman Sachs and Russia's Gazprom, which predicted oil at $200 to 250 a barrel, respectively, by 2008, were proven wrong. Yet, a number of trends are firmly in place that point to higher oil prices beyond the current recession, and are, indeed, transforming the global energy market: a massive rise in oil demand from emerging markets; a lack of OPEC and non-OPEC spare capacity to meet peak demand; a shift of influence over oil reserves and production from international oil companies (IOCs) to national oil companies (NOCs); an insufficient level of investment in production capacity; a decrease in discovery of oil fields; and a rising rate of

Talking Points

- While oil prices are expected to continue to fall in the short term, over the long term, economic recovery will likely boost oil prices above historic highs as energy markets tighten.
- Lower oil prices may slow the massive investment needed to meet rising demand by 2030, delay introduction of energy-saving technologies, and make alternative fuels less competitive.
- Rising oil consumption within key oil-producing states leaves less oil for export, posing a significant constraint on future supply. OPEC and non-OPEC countries are failing to meet production forecasts.
- Oil-field depletion rates are rising worldwide and new oil fields are not being discovered or coming online quickly enough to replace existing production capacity.
- The U.S. should increase pressure on OPEC and non-OPEC countries to open access to international oil companies while authorizing oil production in ANWR, other promising Arctic areas, and the lower 48 states to expand domestic energy production.

This paper, in its entirety, can be found at:
www.heritage.org/Research/EnergyandEnvironment/bg2216.cfm

Produced by the Douglas and Sarah Allison Center for Foreign Policy Studies of the Kathryn and Shelby Cullom Davis Institute for International Studies

Published by The Heritage Foundation
214 Massachusetts Avenue, NE
Washington, DC 20002–4999
(202) 546-4400 • heritage.org

oil-field depletion rates. Making matters worse, there continues to be an increase in energy nationalism and the proclivity to use energy as a geopolitical tool.

The Obama Administration must have a keen appreciation of these trends when formulating national security and international energy security policy. In the 21st century, the two are intertwined as never before. The next Administration must cooperate with other consumer nations to increase pressure on OPEC and non-OPEC countries to expand investment and production access for the more efficient international oil companies.

The Obama Administration and Congress should pursue domestic and international policies that lower the barriers to investment, innovation, and entrepreneurial activity through tax, deregulation, and free trade policies. Such changes will increase production of traditional energy supplies and discovery and development of new technologies to meet the country's energy and transportation needs.

Specifically, the next Administration must encourage export and dissemination of market-based energy-saving technologies and economically competitive, oil-substituting unconventional sources of transportation fuels worldwide. Congress must also authorize oil exploration and production in the Arctic National Wildlife Refuge (ANWR), other promising Arctic areas, and the lower 48 states, including the outer continental shelf, in order to expand domestic energy supply. The Obama Administration must formulate strategies to thwart energy-producing states from using energy as a geopolitical tool against the U.S. and its allies.

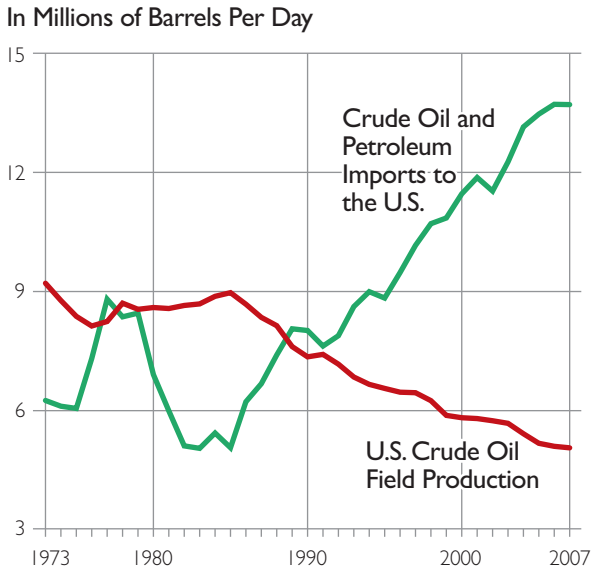
Energy Markets in Transition

Over the past 35 years, U.S. oil production has declined from 9,202,000 million barrels per day (mbd) in 1973 to 5,064,000 mbd in 2007, while imports of foreign oil have continued to rise (see Chart 1).[1]

Today, the United States is the third-largest oil producer after Russia and Saudi Arabia, and the largest oil importer in the world. Yet, the defining trend in this new environment is that demand for oil is no longer driven by developed economies, such as the United States and Western Europe.

U.S. Oil Production and Imports

U.S. oil production has been on the decline since the mid–1980s, while imports have risen dramatically.



Source: Energy Information Administration, Petroleum Basic Statistics, September 2008, at *http://www.eia.doe.gov/basics/quickoil.html* (October 28, 2008).

Chart 1 • B 2216 heritage.org

Instead, demand is being driven by emerging markets in non-OECD (Organisation for Economic Co-operation and Development) countries—China and India, in the Middle East, and Latin America. These states are transforming global energy markets through their sheer size and pace of growth. While demand for oil is likely to be flat in the developed world for the next year or two, it will continue to rise, perhaps at a slower rate, in China and other developing countries.[2]

The Future Demand Crunch. The International Energy Agency (IEA), the energy watchdog for the major industrial countries of the OECD, has been

1. U.S. Energy Information Administration, Petroleum Basic Statistics, September 2008, at *http://www.eia.doe.gov/basics/quickoil.html* (October 28, 2008).
2. Guy Chazan, "Oil-Price Rebound Could Be Severe," Dow Jones Newswires, October 29, 2008, at *http://www.rigzone.com/news/article.asp?a_id=68514* (October 30, 2008).

growing increasingly concerned for the past few years about the future of the global oil market, and warned against taking a business-as-usual approach. This growing alarm was evident in the IEA's 2008 "Medium-Term Market Report."[3]

In the report, the IEA displays a sober realism about the high oil price of $140 per barrel, cautioning against blaming speculators, and insisting instead that prices are "justified by the fundamentals." The report goes on to identify the massive challenge to global energy security in the years ahead: "structural demand growth in developing countries and ongoing supply constraints continue to paint a tight market picture over the medium-term."[4] While the report was released before the global financial crisis, the fundamentals and the challenges to meeting demand by 2015 and 2030 remain largely the same, assuming the current recession remains manageable and will not cause a catastrophic worldwide depression similar to that of the 1930s.

At a recent oil-industry conference, executives and experts warned that the world may face a dramatic escalation of oil prices in the near future as soon as the economy starts to recover. The current low oil prices may cause a repeat of the lack of investment prior to China's and India's enormous rise in unanticipated oil consumption.[5] Fatih Birol, the IEA's chief economist, said that if the investments are not going to be forthcoming, then in two years, "we could see much higher prices than we saw three months ago."

Nobuo Tanaka, the head of the IEA, said that the industry might be setting the stage for yet another supply-and-demand train wreck down the road: "We're concerned that supply won't catch up with demand after this crisis." He added that "the supply crunch may come again, but in a more acute way."[6] This is particularly the case as China and India and other emerging market economies continue to grow and transition into developed economies.

China and India's Growing Energy Thirst

The most significant phenomenon transforming global oil markets today remains the increase of oil demand and energy usage in developing nations, and the development of large numbers of car purchases by the swelling middle classes and their subsequent consumption of a myriad of products made of oil. By 2010, China will overtake the U.S. as the largest energy consumer in the world. Indeed, over the next five years, 90 percent of growth in oil demand will be concentrated in Asia, the Middle East, and Latin America; the demand from these regions will surpass that of the developing world by 2015 (according to pre-crisis trends).

According to the IEA's 2007 *World Energy Outlook: China and India Insights*, between now and 2030, China and India will account for 70 percent of the new global oil demand; their combined oil imports will skyrocket from 5.4 mbd in 2006 to 20 mbd in 2030—overtaking the current combined imports of Japan and the United States.[7] By 2030, China alone may more than double its oil imports to reach 16.5 mbd.

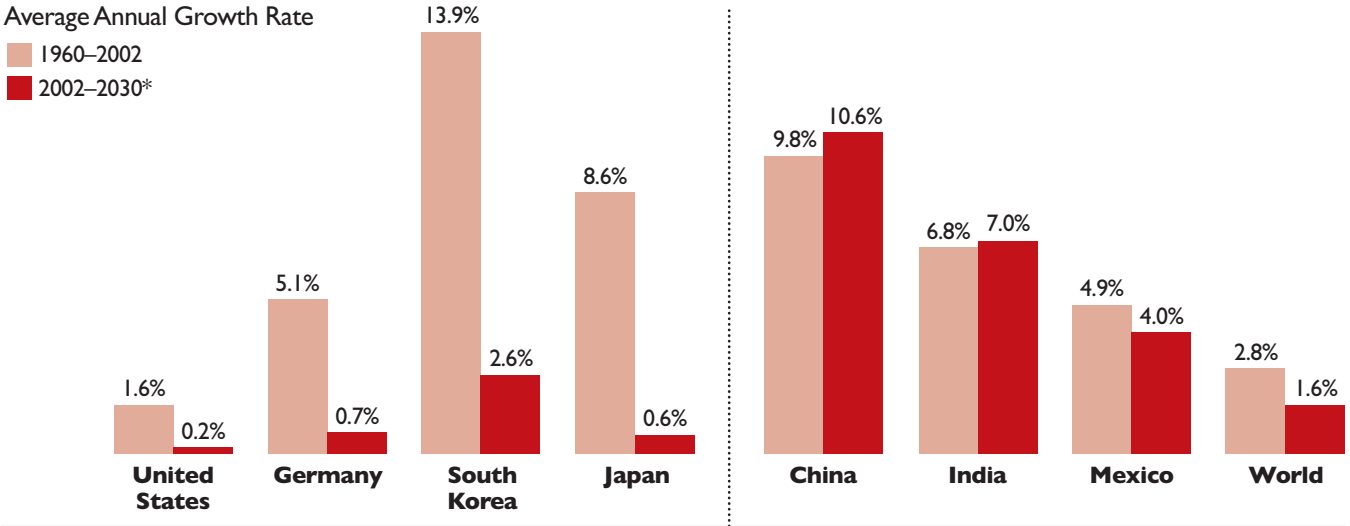
India's primary energy demand is also expected to double by 2030, rising at 3.6 percent a year; before 2025 India may surpass Japan and the U.S. to become the world's third-largest net importer of oil.[8] Thus, China and India together are likely to account for 45 percent of the increase in global primary energy through 2030.

One of the primary factors driving demand for petroleum is the massive proliferation of cars, trucks, and other vehicles in China, India, and other developing countries (see Chart 2). The global consumption of oil for transportation vehicles is expected to grow by 1.7 percent a year between

3. International Energy Agency, "Despite Slowing Oil Demand, IEA Sees Continued Market Tightness Over the Medium Term," July 1, 2008, at *http://www.iea.org/Textbase/press/pressdetail.asp?PRESS_REL_ID=267* (November 25, 2008).
4. *Ibid.*
5. Chazan, "Oil-Price Rebound Could Be Severe."
6. *Ibid.*
7. International Energy Agency, *World Energy Outlook 2007: China and India Insights*, 2007, p. 48.
8. *Ibid.*, p. 46.

Vehicles per Population

The U.S. and other highly industrialized nations can expect a slowdown in their rates of vehicle increases per capita, while the rates in the developing world, including China, India, and Mexico, continue to rise.



Vehicles Per 1,000 Population								
1960	411	73	1.2	19	0.38	1.0	22	41
2002	812	586	293	599	16	17	165	130
2030*	849	705	599	716	269	110	491	254

* 2030 projected.

Source: Joyce Dargay, Dermot Gately, and Martin Sommer, "Vehicle Ownership and Income Growth, Worldwide: 1960-2030," p. 5, at *http://www.econ.nyu.edu/dept/courses/gately/DGS_Vehicle%20Ownership_2007.pdf* (November 5, 2008).

Chart 2 • B 2216 heritage.org

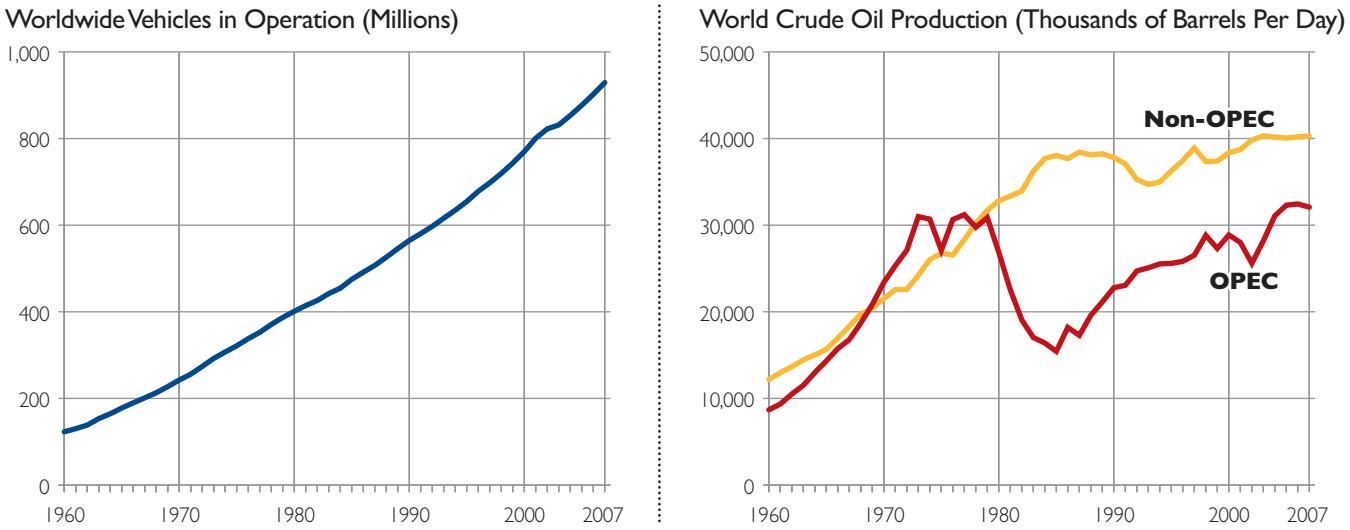
2005 and 2030.[9] There are currently about 900 million vehicles on the road; by 2030, this number is expected to pass 2.1 billion.[10] In China alone, vehicle sales increased by more than 37 percent annually from 2000 to 2006; and in 2006, China surpassed Japan to become the second-largest vehicle market in the world after the United States. In 2015, China will surpass the United States as the largest vehicle market in the world.[11]

At the same time that record numbers of vehicles are coming onto the world's roads, OPEC and non-OPEC production has been struggling and slumping (see Chart 3). These trends in non-OPEC and OPEC oil production are not encouraging, especially in light of the significant amount of transportation fuel that will be necessary.[12]

China's and India's energy needs will continue to grow as these countries are developing. Rising incomes, strong growth in housing and construction, and the use of more electrical appliances will continue to substantially increase demand for petroleum and other sources of energy. For the past three decades, China lived through an unprecedented construction boom and heavy industrial growth

9. *Ibid.*, pp. 81-82.
10. *Ibid.*, pp. 80.
11. *Ibid.*, p. 298.
12. See below for a more detailed description of the challenges in increasing non-OPEC and OPEC production in the years ahead.

Vehicle Growth has Outpaced Crude Oil Production



Sources: Crude oil production, Summary Tables and Basic Indicators, T14, "World Crude Oil Production by Region, 1960–2007," at *http://www.OPEC.org/library/Annual%20Statistical%20Bulletin/interactive/FileZ/Main.htm* (November 1, 2008); Joyce Dargay, Dermot Gately, and Martin Sommer, "Vehicle Ownership and Income Growth, Worldwide: 1960-2030," p. 5, at *http://www.econ.nyu.edu/dept/courses/gately/DGS_Vehicle%20Ownership_2007.pdf* (November 5, 2008).

Chart 3 • B 2216 heritage.org

that requires enormous amounts of oil. Massive infrastructure and construction projects likewise generate a heightened demand for oil in China and India, as they did in the United States, UK, Germany, and Japan between the 1860s and 1960s, especially before and after the two World Wars.[13] Rising demand, however, is not isolated to East and South Asia.

Rising Demand Among the Oil Producers

The oil thirst is also mounting in Persian Gulf nations and in other major oil-exporting states due to rapid industrial expansion, growing populations, and government fuel subsidies, which are increasing demand for gasoline. Rising internal consumption is leaving less oil for export. Importing nations should be concerned about this phenomenon which is a serious constraint on future supply.

Most OPEC and many non-OPEC energy producers continue to employ energy subsidies that artificially promote domestic energy use while insulating the same internal markets from external uncertainties or instability. While such policies buy rulers cheap popularity, they distort the market while governments provide incentives for inefficient energy use. Morgan Stanley estimates that around half the world's population receives fuel subsidies and that nearly a quarter of the world's gasoline is sold at less than market price.[14] For example, gas in Iran costs $0.41 a gallon; in Saudi Arabia, $0.47 a gallon; and in Venezuela $0.12 per gallon.[15]

According to Birol, rising oil demand in the Persian Gulf is second only to that of India and China.[16] Between 1999 and 2007, domestic oil consumption

13. Philip K. Verleger, Jr., "The Oil-Dollar Link," *The International Economy*, Spring 2008, pp. 46–50.
14. "Crude Measures," *The Economist*, May 29, 2008, at *http://www.economist.com/finance/displaystory.cfm?story_id=11453151* (November 25, 2008).
15. "Cruel Fuel World," *Conde Nast Portfolio*, August 13, 2008, at *http://www.portfolio.com/interactive-features/2008/08/Gas-Prices-Around-the-World* (November 25, 2008).
16. Clifford Krauss, "Oil-Rich Nations Use More Energy, Cutting Exports," *The New York Times*, December 9, 2007.

in the Middle East increased by 3.9 percent per year; by comparison, growth among OECD members was 0.4 percent.[17] In the midst of massive investment and construction booms in 2007, the region's six largest oil exporters—Saudi Arabia, United Arab Emirates, Iran, Kuwait, Iraq, and Qatar—cut output by 544,000 barrels per day, while domestic demand increased by 318,000 barrels a day, cutting net exports by 862,000 barrels a day.[18]

The World Bank estimates that the economic growth rate in the Middle East and North Africa has doubled since the 1990s, with Russia exceeding that rate.[19] Such growth translates into larger oil use, especially as more vehicles enter the roadways, all of which results in less oil available for export.

As internal demand continues to skyrocket and aging oil fields decline, some major oil-exporting countries are switching from being net exporters to net importers. Two examples are Indonesia and Great Britain. Algeria, Malaysia, Mexico, and Iran appear to be on this trajectory as well. According to some estimates, this scenario may even be enough to offset planned Saudi increases in capacity.[20]

Overall, the rise in global demand is staggering. The IEA projected in 2007 that global oil consumption will rise by 30 mbd by 2030, reaching 116 mbd.[21] According to a leaked report of the IEA's latest *World Energy Outlook* obtained by the *Financial Times*, however, the IEA has revised oil-consumption projections downward for 2030 from 116 mbd to 106 mbd.[22]

The Future Supply Crunch?

The likelihood that plans to increase crude oil production by 25 to 30 mbd between now and 2030 will succeed is not high. Indeed, it will be extremely challenging to meet targets set for 2013. The U.S. Energy Information Administration (EIA) has estimated that more than 3.5 mbd of new production capacity will be needed each year through 2013 just to hold global output steady, let alone meet growing demand. The picture changes somewhat if one accounts for unconventional and alternative fuels, such as heavy oil, oil (tar) sands, oil shale, and coal-to-liquids (CTL).

There are over 6 trillion barrels of heavy oil in the earth worldwide and 2 trillion of them are recoverable (see Table 1).[23] In recent years, billions of dollars have been invested in the production of unconventional heavy Canadian tar sands and Venezuelan heavy crude. At high oil prices, such investment and production of heavy oil is economical. If oil prices remain low and keep falling, however, these projects will certainly be placed on hold. According to some sources this is already occurring.[24]

The U.S. is the "Saudi Arabia of coal," with over 250 billion tons of recoverable reserves and 27 percent of the world's coal, and, according to some estimates, could provide billions of barrels of CTL over the lifetime of production, depending on the rate of investment.[25] Coal is also abundant in China and India, and the modified Fischer-Tropsch process has been used to manufacture synthetic fuels since

17. Paul Stevens, "The Coming Oil Supply Crunch," Chatham House, August 2008, at *http://www.chathamhouse.org.uk/publications/papers/view/-/id/652/* (November 25, 2008).
18. Neil King, Jr., and Spencer Swartz, "Oil Exporters Are Unable To Keep Up With Demand," *The Wall Street Journal*, May 29, 2008, at *http://online.wsj.com/article/SB121200725158327151.html?mod=hps_us_whats_news* (October 11, 2008).
19. *Ibid.*
20. *Ibid.*, Krauss, "Oil-Rich Nations Use More Energy, Cutting Exports."
21. "The Global Oil Market: A Long-Term Perspective," Samba Financial Group, September 2008, p. 15, at *http://www.samba.com/GblDocs/OilMarket_Sep2008_Eng.pdf* (November 25, 2008)
22. Carola Hoyos and Javier Blas, "World Will Struggle to Meet Oil Demand," *Financial Times*, October 28, 2008, at *http://us.ft.com/ftgateway/superpage.ft?news_id=fto070120080829207778&page=2* (November 25, 2008).
23. *Facing the Hard Truths about Energy*, National Petroleum Council, July 2007, p. 199, at *http://www.npchardtruthsreport.org/index.php* (November 25, 2008).
24. Chazan, "Oil-Price Rebound Could Be Severe."
25. "Liquid Fuels from U.S. Coal," National Mining Association, at *http://www.nma.org/pdf/liquid_coal_fuels_100505.pdf* (November 25, 2008).

Estimated World Oil Resources (Barrels)

Heavy Oil	
World	6 trillion *
Canada	2.5 trillion
Venezuela	1.5 trillion
Russia	1 trillion
United States	100–180 billion
Alaska	44 billion
California	47 billion
Utah	19–32 billion
Alabama	6 billion
Texas	5 billion
Recoverable Shale Oil	
United States	620 billion
Brazil	300 billion
Russia	40 billion
Congo	40 billion
Australia	15 billion
Canada	15 billion
Europe	15 billion
China	10 billion
Rest of world	5 billion

* 2 trillion are ultimately recoverable.

Sources: Heavy oil estimates, *Facing the Hard Truths about Energy*, National Petroleum Council, July 2007, p. 199, at *http://www.npchardtruthsreport.org/index.php* (October 10, 2008); estimated recoverable shale oil, "Resources to Reserves–Oil and Gas Technologies for the Energy Markets of the Future," International Energy Agency, 2005, pp. 75–85, at *http://www.iea.org/textbase/publications/free_new_Desc.asp?PUBS_ID=1568* (December 4, 2008).

Table 1 • B 2216 heritage.org

the 1920s. Oil shale also abounds domestically, and new technologies make it an increasingly economically-justified source of oil.

New automotive propulsion technologies and fuels may be one of the key elements of the 21st-century energy business. As alternative fuels and engines expand their market share, a number of market-driven solutions will likely at least partially replace the 19th-century technology of the gasoline-dependent internal combustion engine, diminishing energy dependency on oil exporters and enhancing America's energy security. President-elect Barack Obama recognizes that the dependence on Middle Eastern and Venezuelan oil is undermining U.S. strategic posture, since $600 billion-a-year wealth transfers to oil exporters are detrimental to the U.S. balance of payment and contributes to the massive trade deficit.

While the challenges of alternative fuels and propulsion systems are abundant, it is clear that increased investment will be necessary to assure that the transportation fuel market is adequately supplied.[26] In the coming years, however, investment in oil production may be facing mounting obstacles. Reducing barriers to investment through open and competitive policies by energy-producing nations and NOCs would be a major factor toward increasing oil production, now and in the future.

The Coming Investment Crunch

In order to increase supply and production in a sector as capital-intensive as oil, a prodigious amount of investment will be needed. A number of reports have sounded the alarm over the massive sum. The IEA's 2006 *World Energy Outlook*, for example, estimated that $20 trillion—about $3,000 for every person living in the world today—will be needed to meet total energy demand by 2030, and that the global oil industry will need investment of over $4 trillion to meet projected demand in 2030.[27] The leaked 2008 IEA draft reportedly states that in order to meet rising demand, investments of $360 billion will be needed each year until 2030.[28]

In non-OPEC and OPEC areas, similar obstacles exist to increasing investment and, thus, production: anti-competitive energy policies including resource nationalism, geopolitical conflict, and other political risks—and currently the low oil prices, which may discourage investment. Governments of many oil-producing states refuse to level the investment playing field, or increase production, with the view that oil in the ground is more valuable than money in the bank. Only by lowering barriers to

26. International Energy Agency, "Despite Slowing Oil Demand, IEA Sees Continued Market Tightness Over the Medium Term."
27. International Energy Agency, *World Energy Outlook 2006: Summary and Conclusions*, 2006, at *http://www.iea.org/Textbase/npsum/WEO2006SUM.pdf* (November 25, 2006), and *Facing the Hard Truths about Energy*, National Petroleum Council, 2007.
28. Hoyos and Blas, "World Will Struggle to Meet Oil Demand."

investment by producing nations through open and competitive policies may sufficient oil production be restored worldwide.

Non-OPEC Producers. The overall performance of non-OPEC suppliers has been very disappointing since 2004, and the situation is expected to worsen. Non-OPEC output has been slumping due to steep declines in key production areas, such as Mexico's Cantarell Oil Field and the North Sea. Russian oil production, which has accounted for over 80 percent of the net increase in non-OPEC oil production since 2003, is stagnant because the Russian government has severely limited foreign ownership of the natural-resources sector and gives substantial preferences to state companies. Without the increases in oil production from Russia and the rest of the former Soviet Union, non-OPEC capacity growth since 2002 would have declined. Investment in green field projects in Russia has been limited, while new oil basins in East Siberia and the Arctic require tens of billions of dollars in new funding and massive infrastructure development, which are unlikely to materialize in view of the economic crisis and low oil prices.[29]

According to the IEA, non-OPEC annual production growth is expected to slow to 0.5 percent between 2008 and 2013, while global demand is expected to grow by 1.6 percent a year. This disparity means that the world will become more reliant on OPEC over this period and through 2030 to meet demand.[30] Scarcity of investment, however, is directly connected to the key issue that handicaps both OPEC and non-OPEC production: increasing resource nationalism, which is the primary cause for the lack of the IOCs' access for to the world's reserves.

The Era of Resource Nationalism and Difficult Oil

Many oil-producing governments severely restrict foreign investment and access to petroleum resources. Out of 1,148 billion barrels of proven oil reserves in the world, national oil companies (NOCs), including OPEC's 13 nations, control approximately 77 percent (886 billion barrels). By adding Russia (an additional 69 billion barrels) and its state-dominated energy sector, the number grows another 6 percent to 83 percent.[31]

When looking at both oil and gas reserves, the Western international oil companies (ExxonMobil, BP, Chevron, ConocoPhillips, Shell) now control less than 10 percent of the world's oil and gas reserves.[32] The remaining portion of reserves is jointly exploited by NOCs and IOCs.

This trend is expected to increase. According to Amy Myers Jaffe, an oil expert at the Baker Institute for Public Policy at Rice University, for the past 30 years, around 40 percent of the increase in oil supply came from OECD members (primarily the wealthier developed countries) and was essentially managed by the IOCs. Looking into the future, over the next 30 years, 90 percent of new hydrocarbon supplies will come from the countries that provide privileged access to national oil companies.[33]

Many of these countries tend to believe their NOCs can run operations as well as, if not better than, the private sector. This belief is not supported by available research data. One militating factor is that NOCs often have close relationships with host governments entailing wider responsibilities and are obliged to pursue political aims rather than strictly commercial ones. For example, many NOCs have to redistribute wealth domestically and foster

29. Stevens, "The Coming Oil Supply Crunch," p. 13.
30. Carola Hoyos and Javier Blas, "IEA Warns of Tightening Oil Supplies," *Financial Times*, July 1, 2008, *http://us.ft.com/ftgateway/superpage.ft?news_id=fto070120080829207778&page=2* (December 5, 2008).
31. "The Role of National Oil Companies in International Energy Markets," The Baker Institute Energy Forum, April 2007, p. 1, at *http://www.rice.edu/energy/publications/nocs.html* (November 26, 2008); Stacy L. Eller, Peter Hartley, and Kenneth B. Medlock, III, "Empirical Evidence on the Operational Efficiency of National Oil Companies," The James A. Baker III Institute for Public Policy, March 2007, at *http://www.rice.edu/energy/publications/nocs.html* (November 26, 2008).
32. *Ibid.*
33. "The Changing Role of National Oil Companies in International Energy Markets," Baker Institute Policy Report No. 35, April 2007.

economic and industrial development. These aims make it "more difficult for the NOCs to replace reserves, expand production or conduct operations in an efficient manner" according to Jaffe.[34]

In a study of 80 firms over a period of three years, the Baker Institute undertook an assessment of the operational efficiency of national oil companies. The study found that NOCs are subject to non-commercial goals and are more likely to under-invest in development of reserves and shift extraction of resources away from the present to the future.[35]

It also found that government ownership decreases "technical efficiency" and "reduces the ability of firms to produce revenues for a given quantity of inputs."[36] Of NOCs that sold petroleum at subsidized prices, on average, only 35 percent were as technically efficient as a comparable private firm.

The study ominously concludes that if oil and gas reserves continue to fall under the purview of government control in the future, it is reasonable to expect that an increasing majority of oil and gas developments will be driven by political objectives, resulting in inefficiencies, lower production, and higher prices. The world is already witnessing this trend in Venezuela, Iran, Russia, and other producer countries.

While many governments are limiting foreign investment at home, such as Hugo Chavez's Venezuela and Putin and Medvedev's Russia, some NOCs, like Russia's Gazprom, are expanding abroad and competing directly with the IOCs.[37] Many of the NOCs prefer to cooperate with other NOCs and other state-owned enterprises, often pursuing host governments' political agendas far away from economic efficiency.

While NOCs are expanding their global reach and monopolizing domestic reserves, traditional "big oil" is shrinking and is not so big anymore. As a result of diminishing exploration and investment opportunities due to resource nationalism, companies are increasingly returning money to investors in the form of dividends rather than making long-term investments. This approach is driven by "value-based management"—an idea that posits that if a company cannot perform better than competing firms, the company should return money to the shareholders, who can then employ it more effectively. In 2005, the six largest IOCs invested $54 billion, and returned $71 billion to their shareholders.[38]

In 2007, the five largest Western oil companies produced 3.2 percent less oil and gas than they did five years earlier—despite spending billions of dollars that year.[39] Exxon Mobil has announced that in the last quarter of 2008 it produced 8 percent less oil and gas equivalent than it did a year earlier.[40] In 2008, its output fell by 614,000 billion barrels per day (bpd). In 2007, 46 percent of the exploratory wells in which Exxon drilled failed to yield commercial quantities of oil and gas.[41] This is becoming a common theme. The trend for IOCs is that it is becoming increasingly more difficult to locate new

34. John Donnelly, "OTC Draws Surging Industry Facing Big Challenges," JPT Online, July 2007, at *http://www.spe.org/spe-app/spe/jpt/2007/07/OTC.htm* (November 26, 2008).
35. *Ibid.*, and Eller, Hartley, and Medlock, "Empirical Evidence of Operational Efficiency of National Oil Companies," p. 1.
36. Eller, Hartley, and Medlock, "Empirical Evidence of Operational Efficiency of National Oil Companies," p. 21.
37. "National Oil Firms Well Placed to Take on Majors—Algeria Energy Minister," FinanzNachrichten (quoting ThomsonReuters), July 1, 2008, at *http://www.finanznachrichten.de/nachrichten-2008-07/11179174-national-oil-firms-well-placed-to-take-on-majors-algeria-energy-minister-020.htm* (December 1, 2008).
38. Stevens, "The Coming Oil Supply Crunch," p. 22.
39. Russell Gold, "Chevron Project Offers Glimpse of Future: More Work, Less Oil," *The Wall Street Journal*, p. A1, October 30, 2008.
40. Aliza Rosenbaum, Rob Cox, Jeff Segal, and Robert Cyran, "Suddenly, Exxon Is Challenged," *The New York Times*, October 31, 2008, at *http://www.nytimes.com/2008/10/31/business/economy/31views.html?_r=1&sq=russia&st=nyt&oref=slogin&scp=5&pagewanted=print* (November 26, 2008).
41. Joe Carroll and Dan Lonkevich, "Exxon Raises Budget Above $25 Billion as Costs Climb," Bloomberg.com, March 5, 2008, at *http://www.bloomberg.com/apps/news?pid=20601087&sid=aexxh8vE5sXk&refer=home* (November 26, 2008).

significant reserves. Most of the finds within the past 10 years are located offshore and present tremendous challenges to bringing the oil online in a timely and efficient manner.

Despite the scrutiny IOCs receive in Congress, it is NOCs that are the new "big oil" and whose investment decisions today truly determine supply for the next three decades and beyond. Considering the staggering future demand, the real issue is whether the NOCs will be able to explore and produce to satisfy the growing demand.

While NOCs could benefit from the technology IOCs offer, they are not the only players in the game. Oil-service companies also play a major role in drilling, field development, seismic, and other tasks. NOCs do hire these firms. Yet, as a recent report from the Chatham House has noted, in contrast to NOCs, IOCs are often exceptionally skilled in managing large projects, which includes the coordination of the service providers. In addition, IOCs have the capability to manage the risk of large projects more easily. As the report concludes, if IOCs are excluded because of resource nationalism, this will inhibit the ability of many national oil companies to expand their production capacity or even maintain capacity at current levels.[42]

OPEC Appetites

With non-OPEC supply growth expected to increase slowly and contribute little to meeting demand by 2030, the burden will increasingly fall on OPEC. The cartel controls more than 76 percent of global reserves and around 42 percent of global production, or 32 mbd. With the rise of unanticipated demand from China and India, and insufficient investment, OPEC's spare capacity has slowly decreased. During the early 1980s, OPEC's spare capacity was around 14 mbd; it is less than two mbd today. Except for Saudi Arabia, most OPEC producers are producing at their peak capacity, leaving little spare capacity until 2013.[43]

No More Easy Oil

Chevron's new Frade oil-drilling project off the coast of Brazil is a prime example of the current challenges. Chevron has spent around $3 billion on Frade, and despite the fact that its first well is currently being drilled, there is no certainty that it will deliver enough oil to justify the effort. In fact, Chevron hopes to extract as little as 270 million barrels out of Frade over the next 18 years. This is barely enough oil to satisfy world demand for under four days. The challenges of this project are a stark reminder that the days of easy oil extraction are over. Chevron took the risk of exploiting this challenging prospect, and Kazakhstan is placing hopes in its Kashagan oil field (managed by ENI), another challenging off-shore endeavor, because these are the only types of opportunities still available. [1]

1. Russell Gold, "Chevron Project Offers Glimpse of Future: More Work, Less Oil," *The Wall Street Journal*, p. A1, October 30, 2008.

To meet the projected demand, OPEC needs to increase supply by 25 mbd to an astounding 60.6 mbd by the year 2030.[44] OPEC states that its member countries, notably Saudi Arabia, have the plans and investments in place to expand production capacity from 2007 levels by 5 mbd by 2012.[45] OPEC has already failed, however, to meet its capacity expansion of 2.57 mbd by the end of 2006.[46] Moreover, the IEA states that OPEC members are missing deadlines and suffering from project completion delays by an average of 12 months.

Significantly, the report singles out Saudi Arabia, stating that it is having more difficulty increasing supply than it cares to admit. This does not bode well

42. *Ibid.*, Stevens, "The Coming Oil Supply Crunch," p. 25.
43. International Energy Agency, "Despite Slowing Oil Demand, IEA Sees Continued Market Tightness Over the Medium Term."
44. "The Global Oil Market: A Long-Term Perspective," Samba Financial Group, p. 15.
45. Stevens, "The Coming Oil Supply Crunch," pp. 26–27.
46. *Ibid.*

for the future of supply since Saudi Arabia's share of the increase in OPEC production will be critical in closing the gap. Samba Financial Group, a Saudi bank, states that of OPEC increases, the Saudi Kingdom would need to produce the incredible amount of 16 to 23 mbd by 2030 to meet rising demand.[47]

There are also legitimate questions over Saudi Arabia's and other producer countries' *willingness* to deliver on such plans. In April 2008, for example, King Abdullah reportedly decreed that a certain amount of new oil discoveries were to be left untapped in order to preserve oil wealth in the world's top exporter for future generations. He said that, "when there were some new finds, I told them, 'no, leave it in the ground, with grace from God, our children need it.'"[48] This statement echoes Ali al-Naimi, the Saudi oil minister, who said in 2007 that there was no need to expand capacity beyond the Kingdom's 2009 target of 12.5 mbd.[49] At the Jeddah Conference in 2008, however, the minister said the Kingdom would be willing to go beyond 12.5 mbd to 15 mbd "if the market requires it."[50] Even so, serious questions exist about the oil-depletion rate in Saudi Arabia's aging fields and their capability to meet the prodigious levels of rising demand.

Global Depletion Rates Threaten Supply

Another factor that will increasingly erode spare capacity and will very likely stand in the way of meeting rising world oil demand by 2030 is that the depletion rates of existing oil fields are rising worldwide with estimates ranging from 4.5 to 9 percent a year.

In order to increase spare capacity every year, new projects must be planned and brought online to replace declining production in existing fields and to accommodate new growing demand. Otherwise, as President George W. Bush said, "If they don't have a lot of additional oil to put on the market, it is hard to ask somebody to do something they may not be able to do."[51]

Thus, when considering that OPEC has to bring online an extra 25 mbd by 2030—in addition to replacing existing production—the rates of depletion are very important.[52]

Moreover, industry experts agree that the giant oil fields containing light sweet crude—the preferred stock for gasoline refining—are not being discovered as often as in the past. The world remains dependent on many of the fields that were discovered in the 1960s and 1970s, including those in West Siberia, the North Sea, Alaska, and the Gulf of Mexico. Many of these fields are declining at 18 percent per year.[53]

The Cambridge Energy Research Associates (CERA), a U.S.-based energy consulting company known for optimistic forecasts, conducted a study that examined 811 separate oil fields around the world. CERA determined that the aggregate global-decline rate of existing fields is 4.5 percent, rather than the higher rates often cited by other experts, and alleged that there is no cause for alarm.[54]

47. "The Global Oil Market: A Long-Term Perspective," Samba Financial Group, p. 7.
48. "Saudi King Says Keeping Some Oil Finds for Future," Reuters, April 13, 2008, at *http://uk.reuters.com/article/oilRpt/idUKL139687720080413* (November 26, 2008).
49. Steve Andrews and Randy Udall, "Saudi King Abdullah Drops Quiet Bombshell; U.S. Media Sleep Through It," April 21, 2008, at *http://www.energybulletin.net/node/43048* (November 26, 2008).
50. "Oil Minister: Saudi Willing to Increase Crude Output," *China Daily*, June 23, 2008, at *http://chinadaily.com.cn/world/2008-06/23/content_6786404.htm* (November 26, 2008).
51. Gail E. Tverberg, "President Bush Questions Saudi Ability to Raise Oil Supply," *Energy Bulletin*, January 16, 2008, at *http://www.energybulletin.net/node/39173* (November 26, 2008).
52. "The Global Oil Market: A Long-Term Perspective," Samba Financial Group, p. 15.
53. Neil King, Jr., "New Fields May Offset Oil Drop," *The Wall Street Journal*, January 17, 2008, p. A4, at *http://royaldutchshellplc.com/2008/01/17/the-wall-street-journal-new-fields-may-offset-oil-drop/* (November 26, 2008).
54. "No Evidence of Precipitous Fall on Horizon for World Oil Production: Global 4.5% Decline Rate Means No Near-Term Peak: CERA/IHS Study," Cambridge Energy Research Associates, January 17, 2008, at *http://www.cera.com/aspx/cda/public1/news/pressReleases/pressReleaseDetails.aspx?CID=9203* (November 26, 2008).

Many industry heavyweights have drawn different conclusions, however. Andrew Gould, chief executive of oil-services giant Schlumberger Ltd., for example, estimates that the depletion rate is closer to 8 percent. Christophe de Margerie, chief executive of the French oil company Total, also believes that the state of existing fields is worsening and that their depletion rates are growing. Mathew Simmons, Houston-based energy banker and president of Simmons and Company International, has observed that few industry professionals believe that the decline rate is below 5 percent.[55]

Notwithstanding this dispute, the implications of a 4.5 percent depletion rate are enormous: A 4.5 percent rate of depletion is the equivalent of losing Iranian production capacity yearly—the fourth-largest producer in the world. Thomas Petrie, vice president at Merrill Lynch and a distinguished energy banker, concluded this from the findings: "However you spin it, a 4.5 percent decline rate is a very sobering fact. People are running hard to find new sources of oil, and that's just to keep even. When was the last time we discovered another Iran?"[56]

The IEA has also just completed a survey of the world's top 400 oil fields in order to assess whether they are on track to meet future demand. In assessing the state of supply, the IEA broke from its past methodology in which it has focused primarily on demand, reflecting this growing concern in the industry. The study sought to determine the actual rate of decline or depletion in these fields. Before the full report was released, one early report stated that a key finding was already abundantly clear: "Future crude supplies could be far tighter than previously thought."[57]

The *Financial Times* has reported that the IEA concluded that *without extra investment* to raise production, the natural annual rate of output decline is 9.1 percent. Rather than losing the equivalent of one Iran every year, this is more in the neighborhood of two Irans, a Saudi Arabia, or a Russia. The report adds that even with extra investment the annual rate of output decline is still 6.4 percent.[58] Presumably, the extra investment would include the $360 billion a year for investment that the IEA cites. Even so, the implications of 6 to 9 percent decline every year for energy security and world markets are enormous.

To answer questions about supply and depletion, the oil industry needs established and independently verifiable procedures for industry audits. Access to reserve and production data is a primary challenge the investment community and market analysts face when seeking to determine depletion rates. In the case of Russia, Saudi Arabia, and several other producing countries, reserve data are closely guarded state secrets, criminally prosecutable if disclosed. This needs to change.

This issue was discussed in a revealing interview for the French daily *Le Monde* in July 2007. Fatih Birol stated there are some serious transparency issues with the Saudi reserves:

> The Saudi government claims 260 [sic] billion barrels of reserves, and I have no official reason not to believe these numbers. Nevertheless, Saudi Arabia—as well as other oil producing countries and companies—should be more transparent with their numbers. Oil is a crucial good for all of us and we have the right to know how much oil, as per international standards, is left.

The Kingdom remains upbeat about meeting rising demand with planned production capacity increases, yet there are two key questions that arise about Saudi Arabia's oil production: Can it increase its current production capacity, and to what level; and to what degree are its reserve statements inflated? Until reliable reserve data are made available to independent outside auditors, these legitimate questions raised by the IEA's report will further complicate forecasts and investment prospects.

55. King, "New Fields May Offset Oil Drop."
56. *Ibid.*
57. Neil King, Jr., and Peter Fritsch, "Energy Watchdog Warns of Oil-Production Crunch," *The Wall Street Journal*, May 22, 2008, p. A1, at *http://online.wsj.com/article_email/SB121139527250011387-lMyQjAxMDI4MTIxMjMyOTI1Wj.html* (November 26, 2008).
58. Hoyos and Blas, "World Will Struggle to Meet Oil Demand."

Conflict and Geopolitics

Conflicts and geopolitics will also militate against increasing production in the coming years. The 2007 National Petroleum Council report, "Facing the Hard Truths about Energy," recognizes the danger and states that in order to attract the trillions of dollars necessary for the expansion of the energy infrastructure, a "stable and attractive investment climate" will be necessary. This is clearly a serious problem when considering the conditions in Iraq, Iran, Venezuela, Sudan, Burma, and Nigeria. As the competition for oil increases, political risks in key production areas are likely to rise over the next 15 to 20 years.

In August 2008, geopolitics and the security of supply were thrust onto the world stage during the Russian–Georgian war when Russian bombs fell within feet of the strategic Baku-Tbilisi-Ceyhan oil pipeline, accompanied by Russian tanks and soldiers occupying the strategic Georgian port city and oil terminal of Poti, illustrating the vulnerability of Caspian and Central Asian energy export routes. As the result of the Georgian war, Kazakhstan, a major foreign investor in Georgia, cancelled plans to build an additional Black Sea terminal for export of its oil.

The more recent news of increased Russia–OPEC cooperation could be even more portentous. In September, a high-level Russian delegation of 20, headed by Russian energy czar Igor Sechin, traveled to Vienna and proposed "extensive cooperation" with the cartel.[59] Together, OPEC and Russia supply more than 50 percent of the world's oil. OPEC Secretary General Abdullah al-Badri visited Moscow for the first time to discuss expanding ties with Russia, including joint production cuts.[60] In this tight global energy market, Russia clearly appreciates the economic and political bargaining power that its vast energy resources provide, especially when coordinated with OPEC hawks like Iran and Venezuela.

By launching a new natural gas OPEC with Iran and Qatar, Moscow is playing a complex and sophisticated game and hopes to enhance its energy superpower status by further cartelizing oil and gas supply, using this leverage to pursue political rather than economic objectives. With OPEC already controlling 40 percent of global production and presiding over three-quarters of the world's reserves, "extensive cooperation" with Russia bodes very ill for the future of energy security.

Confronting the Global Oil Price Challenge: What Can the U.S. Do?

The Obama Administration needs to recognize that after the current economic crisis is over, the world will focus again on the energy scarcity of the past seven years. The long-term trends, including the rise of the BRIC countries (Brazil, Russia, India, and China) and transition of hundreds of millions of people around the world to the middle-class lifestyle, which includes car ownership, is not about to change.

The depletion rates of oil fields worldwide are rising; new oil fields are not coming online quickly enough to replace the existing production capacity. In order to meet growing demand, the world will need much more investment. Neither non-OPEC nor OPEC suppliers are taking necessary steps to facilitate investment and both are failing to meet production forecasts. One result of sustained high energy prices is that many new and exciting technologies—both in oil and gas production, and for substitute fuels—will be increasingly competitive in global markets.

With diminishing global spare capacity and the growing geopolitical potential for future supply disruptions, it is time to confront these anti-competitive policies head-on, such as resource nationalism, protectionism, and government corruption. To increase and diversify automotive fuel supply, boost investment, open access to the remaining oil and gas reserves, and diversify the basket of transportation fuels, the Obama Administration and Congress, in coordination with international oil companies and other consumer countries, should:

59. Neil King, Jr., Spencer Swartz, and Anna Raff, "Russia's Bid to Strengthen OPEC Ties May Sow Unease," *The Wall Street Journal*, September 10, 2008, p. A7.

60. "Russia and OPEC to Seek Closer Ties," *The Gulf Times*, October 21, 2008, at *http://www.gulf-times.com/site/topics/article.asp?cu_no=2&item_no=249328&version=1&template_id=48&parent_id=28* (November 26, 2008).

- **Increase pressure on OPEC and non-OPEC countries** to increase exploration and development of petroleum reserves, expanding access for the more efficient international oil companies. The Obama Administration should work with other energy-consuming governments and international organizations, such as the International Energy Agency, to enhance the rule of law and promote property rights and independent market institutions among oil-exporting countries. Consumer nations should make opening energy-producing economies to energy investment a part of their bilateral agendas with producers. Consumer nations should assist producers in supporting institutions that implement free-market principles in order to facilitate further development of energy resources. This includes disruption of cartel-like behavior by OPEC, which is illegal under U.S. law.
- **Authorize oil exploration and production in ANWR, other promising Arctic areas, and the lower 48 states** in order to expand domestic energy supply. Congress should also streamline regulations for areas in the Arctic that it has already opened, but that remain heavily regulated.
- **Encourage market-based energy-saving technologies and competitive unconventional sources of transportation fuels worldwide** to expand global supply of transportation fuels and facilitate transition to electricity-based urban automotive transportation. This should not, however, entail direct subsidies, preferential tax treatment, or loan guarantees through the bailout in the stimulus package or direct government intervention.
- **Facilitate worldwide transformation to consumer choice in automotive fuels and more efficient automotive propulsion technologies without distorting the market or subsidizing automakers.** This can be achieved by moving to a tax code that is more conducive to investment and entrepreneurial activity and that does not favor one investment or activity over another; by enacting deregulation to facilitate safe exploration of oil, gas, oil shale, and nuclear, etc.; and by encouraging entrepreneurial activity to develop new technologies in a competitive market. Such policies will also boost investment to expand capacity for traditional oil and gas and the move to new energy sources and technologies. The private sector then will be able to facilitate construction of alternative infrastructure for transportation, including electricity-based automotive transportation (plug-in), flex-fuel standards, and alternative fuel refueling capabilities.

Conclusion

After the current economic slump, a tight transportation-fuel (petroleum) market is likely to return in the years ahead due to global demand, heightened political risks, and increasing resource nationalism by oil producing governments. This perfect storm of supply and demand turbulence may have temporarily subsided, but two major implications remain. First, oil-producing states will return to accruing more global influence in the years to come, wielding the energy weapon, pressuring consumer nations, and placing constraints on the foreign policy options for the U.S. and its allies. Second, the world could face a major supply crunch by 2015 or even before. These trends are far-reaching and have major implications for national security and energy policies, and must be anticipated by the incoming Obama Administration.

Finally, oil is a finite resource which is produced by a partially cartelized imperfect market. Consumer countries should expand cooperation and reduce prices by increasing investment and production, promoting free and transparent markets and conservation, and diminishing threats to national security. Yet, in the long term, high demand, inadequate supply, and severe geopolitical risks combine to make oil a problematic transportation fuel. High oil prices are driving science and R&D to deliver more efficient and less expensive sources of transportation fuels and new engine designs, which may eventually offer alternatives to conventional oil while reducing its price.

—Ariel Cohen, Ph.D., is Senior Research Fellow in Russian and Eurasian Studies and International Energy Security in the Douglas and Sarah Allison Center for Foreign Policy Studies, a division of the Kathryn and Shelby Cullom Davis Institute for International Studies, at The Heritage Foundation. Owen Graham is a Research Assistant in the Allison Center.